FINAL

Newark Bay Study Area

Combined Sewer Overflow and Stormwater Outfall Characterization - Phase I: Reconnaissance Work Plan - Information Gathering

Glenn Springs Holdings, Inc.

East Brunswick, New Jersey

July 2017

Revision 2

CSO and SWO Characterization – Phase I:
Reconnaissance Work Plan – Information Gathering

Newark Bay Study Area

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Acronyms and Abbreviations

AOC	Administrative Order on Consent
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COPC	constituents of potential concern
CSO	combined sewer overflow
ERP	emergency relief point
FOIA	U.S. Freedom of Information Act
FOIL	New York Freedom of Information Law
GIS	geographical information system
IEC	Interstate Environmental Commission
JMEUC	Joint Meeting of Essex & Union Counties
LPRSA	Lower Passaic River Study Area
LTCP	Long-Term Control Plan
MS4	municipal separate storm sewer system
NBSA	Newark Bay Study Area
NJDEP	New Jersey Department of Environmental Protection
NJPDES	New Jersey Pollutant Discharge Elimination System
NYCDEP	New York City Department of Environmental Protection
NY/NJ	New York/New Jersey
NYSDEC	New York State Department of Environmental Conservation
OPRA	New Jersey Open Public Records Act
PANYNJ	Port Authority of New York and New Jersey
POTW	publicly owned treatment works
PVSC	Passaic Valley Sewerage Commission
RI/FS	Remedial Investigation/Feasibility Study
SIUs	significant industrial users
SPDES	State Pollutant Discharge Elimination System

SWMP	Stormwater Management Program
SWO	stormwater outfall
USEPA	U.S. Environmental Protection Agency

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CSO and SWO Characterization – Phase I: Reconnaissance Work Plan – Information Gathering

Newark Bay Study Area

1. Introduction

Glenn Springs Holdings, Inc. (GSH), on behalf of Occidental Chemical Corporation (the successor to Diamond Shamrock Chemicals Company [formerly known as Diamond Alkali Company]), is currently conducting a Remedial Investigation and Feasibility Study (RI/FS) of the Newark Bay Study Area (NBSA). The RI/FS is being conducted in accordance with the Administrative Order on Consent (AOC) for the NBSA, entered pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Index No. 02-2004-2010 (U.S. Environmental Protection Agency [USEPA] 2004).

As part of the ongoing NBSA RI/FS activities, and according to the AOC, GSH is required to "…conduct a characterization of stormwater and combined sewer overflows into the Newark Bay Study Area, consistent with the characterization of stormwater and combined sewer overflows into the lower Passaic River being conducted for the Lower Passaic River Restoration Project." The Reconnaissance Study will focus on identifying (1) combined sewer overflow (CSO) outfalls, (2) municipal separated stormwater outfalls (SWOs), (3) emergency relief points (ERPs), (4) publicly owned treatment works' (POTWs') outfalls and/or bypasses, and (5) privately-owned facility permitted stormwater outfalls.

Given the large number of outfalls likely to exist within the NBSA, GSH will conduct the reconnaissance in phases. This work plan addresses the initial phase (Phase I) of the Reconnaissance Study, which will be limited to information gathering on the subject outfalls through publicly available information sources, published literature, and other open sources. Pending the results of the Phase I reconnaissance activities, a Phase II CSO/SWO sample collection study may also be conducted. The second phase of the Reconnaissance Study (if needed) will consist of in-field outfall verification, physical characterization and sampling. Should this subsequent phase be necessary, GSH will submit a Quality Assurance Project Plan (QAPP) to guide the field sampling program effort.

1.1 Site Description

Newark Bay is located in the densely populated urban region of the New York/New Jersey (NY/NJ) metropolitan area, which includes portions of northern New Jersey and New York City. Newark Bay is part of the larger NY/NJ Harbor Estuary and is approximately 6 miles long and 1 mile wide (Tierra 2004, 2006).

The NBSA (Figure 1) is bordered to the west by the cities of Newark and Elizabeth, NJ and the Newark Liberty International Airport, to the east by Jersey City and Bayonne, NJ, to the south by Staten Island, NY, and to the north by Kearny, NJ and the Passaic and Hackensack Rivers (USEPA 2004; Tierra 2004, 2006). Specifically, the NBSA includes the Newark Bay proper and portions of the Hackensack River, Arthur Kill, and the Kill van Kull (USEPA 2004; Tierra 2004).

According to The Report on Investigation of Sources of Pollutants and Contaminants (Tierra 2006) the following municipalities in the NBSA use CSO systems:

- Newark, NJ
- Kearny, NJ
- Jersey City, NJ

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- Bayonne, NJ
- Elizabeth, NJ
- Staten Island (Port Richmond), NY

CSOs that discharge to the NBSA from the municipalities that are listed above, SWOs from municipalities located in the NBSA, and significant industrial users (SIUs) located in the NBSA, as detailed in The Report on Investigation of Sources of Pollutants and Contaminants (Tierra 2006), are summarized below.

Municipality	CSO Outfalls that Discharge to the NBSA	SWOs that Discharge to the NBSA	SIUs that Discharge to the NBSA
Newark, NJ	8	44	86
Kearny, NJ	0[1]	0[2]	10
Jersey City, NJ	11	7	10
Bayonne, NJ	18	3	8
Elizabeth, NJ	42	30	21
Staten Island (Port Richmond), NY	11	1	2

The POTWs located in the NBSA that were identified in The Report on Investigation of Sources of Pollutants and Contaminants (Tierra 2006) consist of the facilities listed below, along with their associated number of overflow points:

- Passaic Valley Sewerage Commission: 1
- Joint Meeting Essex and Union Counties: 1
- Former Town of Kearny Sewage Treatment Plant: 1
- Former Jersey City West Side Sewage Treatment Plant: 1
- Former Bayonne Sewage Treatment Plant: 1
- Staten Island (Port Richmond) Sewage Treatment Plant: 1

See Figure 2 for the locations of the various CSO outfalls, SWOs, POTWs, and SIUs that are situated in the NBSA.

2. Study Objectives

The objective of this initial phase of the Reconnaissance Study is to develop an inventory of CSO outfalls, SWOs, ERPs, POTW outfalls, and outfall points for permitted industrial facilities that discharge to the NBSA. The inventory will include information regarding location (including geographical coordinates, if known), history, current operational status, and construction details, if available.

[1] Kearny CSOs discharge to the Lower Passaic River Study Area (LPRSA) and not to the NBSA.
[2] The southern portion of Kearny is a separated system. Although SWOs were not identified in the 2006 report this is identified as a data gap.

The Report on Investigation of Sources of Pollutants and Contaminants (Tierra 2006) will serve as the baseline for this report. This study will seek to address any data gaps identified in the 2006 report (see Section 3.1) and identify any new data gaps that remain.

2.1 Phases of the NBSA CSO and Outfall Reconnaissance

Phase I of the Reconnaissance Study will consist of gathering publicly available and/or published information about the various outfalls discharging to the NBSA and parts of the Arthur Kill, Kill van Kull, and Hackensack River. It should be noted that information regarding the Passaic River CSO outfalls and SWOs has been previously obtained from other studies (USDOI 1969; Elson T. Killam 1976; Killam Associates 1996; Clinton Bogart 1993; Louis Berger 2014). Based on the information obtained through the information-gathering phase of the Reconnaissance Study (Phase I), a determination will be made by USEPA as to whether it is necessary to perform an in-field outfall verification and collect and sample combined wastewater and/or stormwater samples from select outfalls that discharge to the NBSA. Should any additional work beyond the Phase I Reconnaissance be anticipated, a QAPP will be developed accordingly. It is expected that GSH and USEPA will work collaboratively (via meetings and/or conference calls) in evaluating the information and discussing the merits of continuing to the next phase.

3. Phase I Reconnaissance Methodology

Each step of the Phase I Reconnaissance methodology is described in greater detail below.

3.1 Information Gathering

This Reconnaissance Study will address information data gaps that remained after the publication of The Report on Investigation of Sources of Pollutants and Contaminants (Tierra 2006). Specifically, the following information will be sought from public agencies or public databases:

- The locations of SWOs in Newark, Kearny (southern section), Jersey City, Bayonne, and Elizabeth, NJ, and Staten Island (Port Richmond), NY.
- A listing of the names of SIU dischargers located within the NBSA that were cited for violations of applicable permit conditions and a description of related permit violations.
- More robust technical information related to the sewer systems, including reports and mapping to help identify additional mechanisms for sources of constituents of potential concern (COPCs) to enter into the NBSA from the POTWs identified above.

GSH will gather information regarding the outfalls that lead to the NBSA through the use of the U.S. Freedom of Information Act (FOIA[3]), the Open Public Records Act of New Jersey (OPRA[4]), and the New

[3] FOIA, formally known as the Freedom of Information Act, 5 U.S.C. § 552, as Amended By Public Law No. 104-231, 110 Stat. 3048, is a law granting the public the right to access information from the federal government.

[4] OPRA, formally known as the Open Public Records Act, N.J.S.A. 47:1A-1 et seq., is a law granting the public the right to access information from the state, county, and local government entities of the State of New Jersey.

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York Freedom of Information Law (FOIL[5]) public information requests, as well as on-site agency visits. The focus of these efforts will be to gather new information regarding outfalls and/or to supplement existing information on known outfalls. GSH will compare the previously gathered, older information relative to outfall names, locations, physical characteristics and data to newly acquired documents. Any new information obtained from those documents will be identified in the NBSA CSO/SWO Reconnaissance Report.

At a minimum, the following public agencies or municipalities will be contacted to gather information:

- USEPA
- New Jersey Department of Environmental Protection (NJDEP)
- New York State Department of Environmental Conservation (NYSDEC)
- New York City Department of Environmental Protection (NYCDEP)
- City of Newark, NJ
- City of Elizabeth, NJ
- Town of Kearny, NJ
- City of Jersey City, NJ
- City of Bayonne, NJ
- Joint Meeting of Essex & Union Counties
- Passaic Valley Sewerage Commission
- Port Authority of New York and New Jersey (PANYNJ)
- Interstate Environmental Commission (IEC)

The following types of information, at a minimum, will be requested from public information sources:

CSO-RELATED INFORMATION
Municipal CSO permits
Available municipal mapping of CSOs in geographical information system (GIS) format and/or hardcopy, as available
System network piping diagrams containing pipe specifications and structures, including locations and piping diagrams for pump stations, storage tanks, and treatment plants
Sewer system evaluation reports (e.g. Sewer System Inventory and Assessment Report by Killam Associates prepared for City of Newark, February 1996)

[5] FOIL, formally known as the Freedom of Information Law, NY Pub. Off. Law sec. 84 et seq., is a series of laws granting the public the right to access information from the state, county and local government entities of the State of New York.

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Reports detailing outfall performance, including reports submitted as part of any permit conditions, if applicable
Reports describing outfall modeling
Operating and/or bypassing records for CSOs
Municipal CSO long term control plans (LTCPs)
Legal agreements detailing outfall ownership/responsibility
Other information, including any tables, summary descriptions, or correspondence that discuss outfall locations, physical characteristics, and related service area drainage and land use information
SWO-RELATED INFORMATION
Municipal SWO permits
Available municipal mapping of SWOs in GIS format and/or hardcopy, as available
System network piping diagrams containing pipe specifications and structures, including locations and piping diagrams for pump stations, storage tanks, and treatment plants
Municipal stormwater management programs (SWMPs)
Sewer system evaluation reports (e.g. Sewer System Inventory and Assessment Report by Killam Associates prepared for City of Newark, February 1996)
Reports detailing outfall performance, including reports submitted as part of any permit conditions, if applicable
Reports describing outfall modeling
Legal agreements detailing outfall ownership/responsibility
Other information, including any tables, summary descriptions, or correspondence that discuss outfall locations, physical characteristics, and related service area drainage and land use information
ERP-RELATED INFORMATION
Available municipal mapping of ERPs in GIS format and/or hardcopy, as available
System network piping diagrams containing pipe specifications and structures, including locations and piping diagrams for pump stations, storage tanks, and treatment plants
Sewer system evaluation reports (e.g. Sewer System Inventory and Assessment Report by Killam Associates prepared for City of Newark, February 1996)
Reports detailing outfall performance, including reports submitted as part of any permit conditions, if applicable
Reports describing outfall modeling

Legal agreements detailing outfall ownership/responsibility
Other information, including any tables, summary descriptions, or correspondence that discuss outfall locations, physical characteristics, and related service area drainage and land use information
POTW RELATED INFORMATION
POTW permits
Available mapping of POTW outfalls developed in GIS format and/or a hardcopy, as available
System network piping diagrams containing pipe specifications and structures, including locations and piping diagrams for pump stations, storage tanks, and treatment plants
Legal agreements detailing outfall ownership/responsibility
Other information, including any tables, summary descriptions, or correspondence that discuss outfall locations, physical characteristics, and related service area drainage and land use information
PERMITTED USERS/ PERMITTEE-RELATED INFORMATION
NJPDES and SPDES permittee databases

Online information databases maintained by NJDEP[6], NYSDEC, NYCDEP, IEC, PANYNJ, City of Newark, City of Jersey City, and any other public databases will also be reviewed to potentially supplement the inventory of NBSA outfalls.

Table 1 identifies the public entities to which GSH will submit public information requests. Table 2 identifies public websites and databases that GSH will review for information.

3.2 Information Summary

Together with information previously obtained, GSH will compile, review, and summarize newly acquired information obtained from sources identified in Section 3.1, above. GSH will document the location of the identified outfalls (including geographical coordinates, if known), history, type of outfall, current operational status (whether active or inactive), physical condition, and construction details of these outfalls that serve as a wastewater and/or stormwater source to the NBSA.

GSH will also collect available public information on pipe elevations. In addition, and to the extent possible, GSH will compile information regarding the elevations of CSO outfalls in relation to mean low water and mean high water to determine whether outfalls may be inundated with water during high or low tides and, therefore, difficult to identify during the field reconnaissance.

[6] Specifically, as recommended by USEPA: http://njdep.maps.arcgis.com/apps/Viewer/index.html?appid=70dd49de342949ca933e840d0c530fc7, at a minimum.

With regard to outfall history, a summary of documented permitted and non-permitted releases will be included to the extent such information is available. Examples of information to be summarized if available include chemical nature, volume and/or duration of release.

3.3 Reporting

GSH will prepare and submit a report documenting the information gathered through the research efforts described in Section 3.1. Included in the report will be a tabulation of information detailed in Section 3.1 including a listing the locations of the CSO outfalls, SWOs, ERPs, and NJPDES/SPDES discharge points (including geographic coordinates, if known), outfall type, history, operational status, construction details and physical condition, if known. Additional information such as owner, contact information, associated reports and/or data, will also be tabulated and, if possible, linked to specific outfalls. In addition to this table, GSH will provide a map showing the locations of the identified CSOs, SWOs, ERPs, POTW outfalls, and NJPDES/SPDES dischargers that contribute wastewater and stormwater flow to the NBSA To the extent possible, based on information received from regulatory sources, GSH will provide call-out boxes on the map providing summary information relative to CSO contribution (i.e., volume, duration and concentrations of COPCs).

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4. References

Clinton Bogert Associates. 1993. Report to the City of Newark, Combined Sewer Overflow Abatement Strategy. August.

Elson T. Killam Associates, Inc. 1976. Report upon Overflow Analysis to Passaic Valley Sewerage Commissioners Passaic River Overflows.

Killam Associates. 1996. City of Newark, Essex County, New Jersey, New Jersey Pollutant Discharge Elimination System, General Permit No. NJ0105023 for Combined Sewer Systems, Sewer System Inventory and Assessment Report. February.

Louis Berger. 2014. Lower Eight Miles of the Lower Passaic River Remedial Investigation Report for the Focused Feasibility Study.

Tierra Solutions, Inc. 2004. Newark Bay Study Area Remedial Investigation Work Plan. Sediment Sampling and Source Identification Program. Volume 1a of 3, Inventory and Overview Report of Historical Data. Revision 0. June.

Tierra Solutions, Inc. 2006. Newark Bay Study Area RIWP, Report on Investigation of Sources of Pollutants and Contaminants. Submitted to USEPA, Region II, New York, N.Y. September 15.

U.S. Department of the Interior. 1969. Report on the Quality of the Interstate Waters of the Lower Passaic River and Upper and Lower Bays of the New York Harbor. U.S. Department of the Interior, U.S. Federal Water Pollution Control Administration, Northeast Region, Hudson Delaware Basins Office, Edison, NJ. November.

USEPA. 2004. Administrative Order on Consent for Remedial Investigation and Feasibility Study, Newark Bay Study Area USEPA Index No. CERCLA-02-2004-2010. Including all attachments, amendments, and updates. February 17.

Tables

Table 1: Public Information Sources

CSO and SWO Characterization – Phase I
Reconnaissance Work Plan – Information Gathering
Newark Bay Study Area

Agency Name	Contact Personnel and Address
United States Environmental Protection Agency, Region 2, New York, NY	Regional Freedom of Information Officer U.S. EPA, Region 2 290 Broadway, 26th Floor New York, NY 10007-1886
New Jersey Department of Environmental Protection	Office of Records Access 401 East State Street Trenton, NJ 08625-0420
New York State Department of Environmental Conservation	Records Access Officer New York State Department of Environmental Conservation 625 Broadway Albany, NY 12233-1500
New York City Department of Environmental Protection	Records Access Officer 59-17 Junction Blvd., 19th Floor Flushing, New York, NY 11373
City of Newark	Office of the City Clerk City Hall, Room 206 920 Broad Street Newark, NJ 07102
City of Elizabeth	Office of the City Clerk City Hall 50 Winfield Scott Plaza Elizabeth, NJ 07201

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Table 1: Public Information Sources

CSO and SWO Characterization – Phase I
Reconnaissance Work Plan – Information Gathering
Newark Bay Study Area

Agency Name	Contact Personnel and Address
City of Jersey City	Office of the City Clerk 280 Grove Street Jersey City, NJ 07302
City of Bayonne	Office of the City Clerk 630 Avenue C Bayonne, NJ 07002
Town of Kearny	Town Clerk 402 Kearny Avenue Kearny, NJ 07032
Joint Meeting of Essex & Union Counties	Custodian of Records 500 South First Street Elizabeth, NJ 07202
Passaic Valley Sewerage Commission	Clerk 600 Wilson Avenue Newark, NJ 07105
Port Authority of New York & New Jersey	Secretary of the Port Authority 4 World Trade Center 150 Greenwich Street New York, NY 10007
Interstate Environmental Commission	Senior Manager / Records Custodian 2800 Victory Blvd. Building 6s, Room # 106 College of Staten Island – CUNY Campus Staten Island, NY 10314

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Table 2: Public Information Websites and Databases

CSO and SWO Characterization – Phase I
Reconnaissance Work Plan – Information Gathering
Newark Bay Study Area

Agency Name	Website
United States Environmental Protection Agency, Region 2, New York, NY	https://www.epa.gov/aboutepa/epa-region-2
New Jersey Department of Environmental Protection	http://njdep.maps.arcgis.com/apps/Viewer/index.html?appid=70dd49de342949ca933e840d0c530fc7
New York State Department of Environmental Conservation	https://www.dropbox.com/sh/hz3spt98h4d88ue/AADmNLcYxcpZQFeWUNAxGMi9a?dl=0
New York City Department of Environmental Protection	http://www.nyc.gov/html/dep/html/wastewater/wwsystem-plants.shtml http://www.nyc.gov/html/dep/html/stormwater/combined_sewer_overflow.shtml http://www.nyc.gov/html/dep/html/stormwater/ms4.shtml
City of Newark	http://www.newarkcso.info/file/reprts/Newark_SMP-rev(1).pdf.
City of Elizabeth	http://www.elizabethnj.org/
City of Jersey City	http://www.jcmua.com/PDF's/Stormwater%20Management%20Plan%20August%202008.pdf
City of Bayonne	http://www.bayonnenj.org/committees/bmua/
Town of Kearny	http://kearnynj.org/kmua/home
Joint Meeting of Essex & Union Counties	http://www.jmeuc.com/

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Table 2: Public Information Websites and Databases

CSO and SWO Characterization – Phase I
Reconnaissance Work Plan – Information Gathering
Newark Bay Study Area

Agency Name	Website
Passaic Valley Sewerage Commission	http://www.nj.gov/pvsc/
Port Authority of New York & New Jersey	http://www.panynj.gov/about/pdf/newark-liberty-sustainable-management-plan.pdf
Interstate Environmental Commission	http://www.iec-nynjct.org/publications.htm and http://www.iec-nynjct.org/archive.htm

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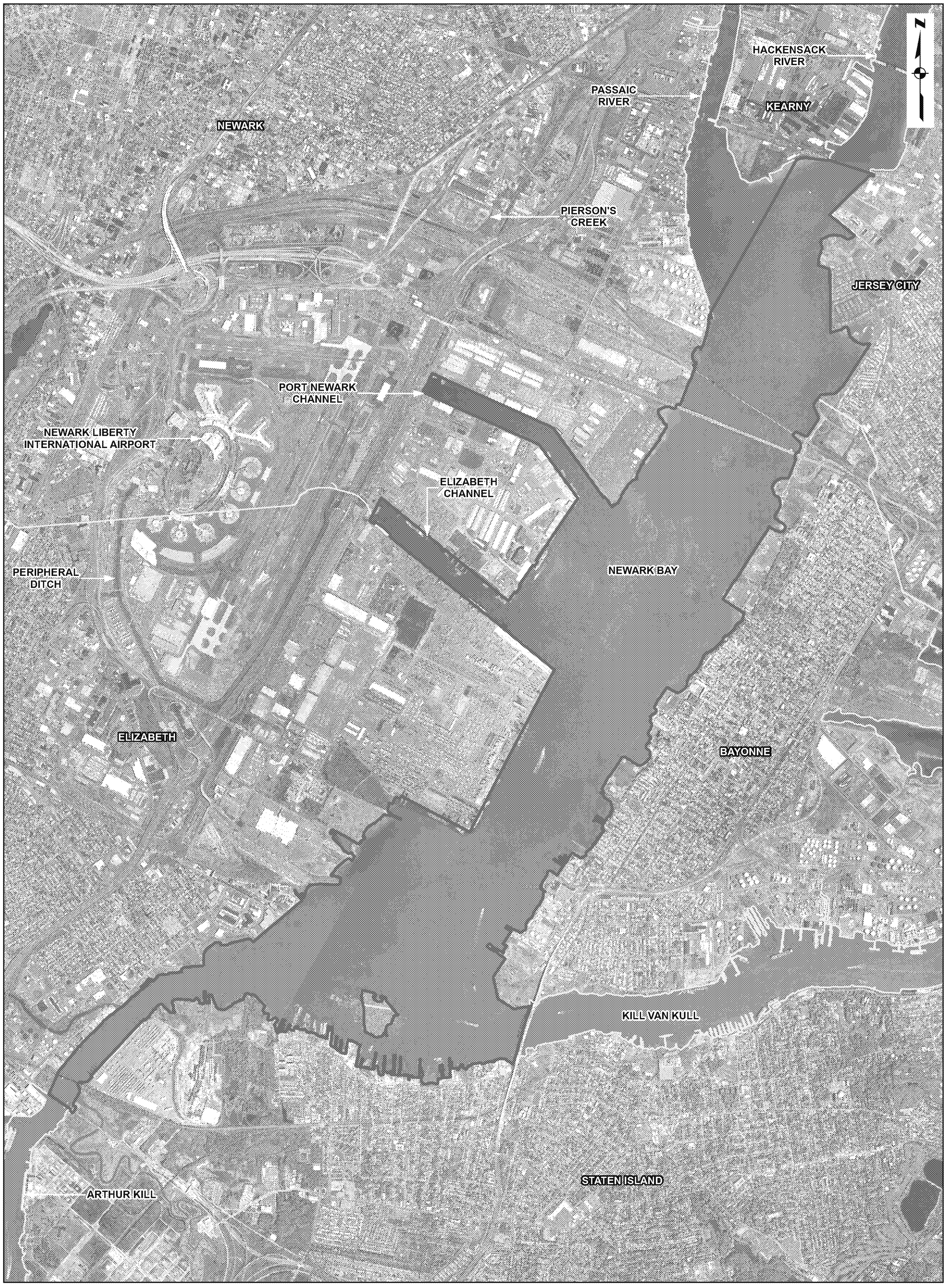
Figures

Data Location: Syracuse Created By: rtardiff Modified By: rtardiff
G:\GIS\GlennSpringsHoldings\NewJerseyHarborEstuary\NewarkBay\CSO_Recon_Work_Plan\mxd\Geographic Boundaries - Newark Bay - CSO WP_v3.mxd 5/26/2017 11:37:00 AM



LEGEND:

- NBSA
- MUNICIPAL BOUNDARY

0 3,000 6,000 Feet

GRAPHIC SCALE

NOTES:

1. AERIAL IMAGERY COLLECTED IN 2004 PROVIDED BY INTRASEARCH, CENTENNIAL, CO.
2. MUNICIPAL BOUNDARIES PROVIDED BY THE NEW JERSEY GEOGRAPHIC INFORMATION NETWORK.
3. SOME OUTLINES ON FIGURE 1 DON'T COMPLETELY MATCH UP TO THE SHORELINE BECAUSE THEY ARE EITHER: 1) TIDAL (AND THERE MAY BE SOME MUDFLATS VISIBLE IN SHALLOW WATER) AND 2) SOME PIERS MAY BE IMPERMANENT STRUCTURES OR REMNANTS OF OVERWATER STRUCTURES.

FIGURE: 1

NBSA GEOGRAPHICAL BOUNDARIES

GLENN SPRINGS HOLDINGS, INC.
LOWER PASSAIC RIVER STUDY AREA
COMBINED SEWER OVERFLOW AND STORM WATER OUTFALL CHARACTERIZATION – PHASE I: RECONNAISSANCE WORK PLAN – INFORMATION GATHERING

NOTES:

1. BOUNDARIES ARE AS INTERPRETED FROM PUBLICLY AVAILABLE DOCUMENTS INCLUDING SPATIAL DATA OBTAINED FROM THE NEW JERSEY GEOGRAPHIC INFORMATION NETWORK.
2. AERIAL IMAGERY COLLECTED IN 2004 PROVIDED BY INTRASEARCH, CENTENNIAL, CO.
3. DISCHARGE LOCATIONS MAPPED BASED ON LOCATIONS OUTLINED IN THE REPORT ON INVESTIGATION OF SOURCES OF POLLUTANTS AND CONTAMINANTS (TIERRA 2006).

0 0.9 1.8 Miles
GRAPHIC SCALE

N

PASSAIC RIVER
HACKENSACK RIVER
PIERSON'S CREEK
PORT NEWARK CHANNEL
PERIPHERAL DITCH
ELIZABETH CHANNEL
NEWARK BAY
ELIZABETH RIVER
MORSES CREEK
ARTHUR KILL
PILES CREEK
KILL VAN KULL
PLATTY KILL CREEK
STATEN ISLAND
JOINT MEETING ESSEX-UNION
NEWARK LIBERTY INTERNATIONAL AIRPORT
PEDDIE DISTRICT
WHEELER DISTRICT
ADAMS DISTRICT
GLUDEN DISTRICT
WAVERLY DISTRICT
TOWN OF KEARNY
CITY OF JERSEY CITY WEST SIDE PLANT
PVSC
PORT RICHMOND STATEN ISLAND
CITY OF BAYONNE

N-022 N-023 N-024 N-025 N-026 N-027 N-028 N-029 N-030
E-001 E-002 E-003 E-005 E-006 E-007 E-008 E-009 E-010 E-011 E-012 E-013 E-014 E-016 E-017 E-021 E-022 E-023 E-025 E-026 E-027 E-028 E-029 E-030 E-031 E-032 E-033 E-034 E-035 E-036 E-037 E-038 E-039 E-040 E-041 E-042 E-043
JC002 JC003 JC004 JC005 JC006 JC007 JC008 JC009 JC010 JC011 JC013
RW-2 RW-3 RW-4 RW-5 RW-6 RW-7 RW-8 RW-9 RW-10 RW-11 RW-12 RW-13
B002 B003 B004 B005 B009 B010 B011 B012 B013 B014 B015 B016 B017 B018 B019 B020 B022 B024 B026 B028 B029 B030 B034 B035
PR-002 PR-003 PR-004 PR-005 PR-006 PR-007 PR-008 PR-009 PR-024 PR-025 PR-026 PR-027 PR-028 PR-029 PR-033 PR-034 PR-035 PR-036 PR-037

LEGEND:

- BAYONNE SIU
- ELIZABETH SIU
- JERSEY CITY SIU
- NEWARK SIU
- ACTIVE CSO
- INACTIVE CSO
- POTW AND/OR PUMP STATION OUTFALL
- SWO
- PVSC SOUTHSIDE INTERCEPTOR
- PERIPHERAL DITCH
- PIERSON'S CREEK
- BAYONNE CSO DISTRICT
- ELIZABETH CSO DISTRICT
- JERSEY CITY CSO DISTRICT
- NEWARK CSO DISTRICT
- POTW AND/OR PUMP STATION
- NBSA GEOGRAPHIC AREAS:
- NEWARK BAY NORTH
- NEWARK BAY CENTRAL
- NEWARK BAY SOUTH

FIGURE: 2

NBSA CSO, POTW, SWO, AND SIU LOCATIONS

GLENN SPRINGS HOLDINGS, INC.
LOWER PASSAIC RIVER STUDY AREA
COMBINED SEWER OVERFLOW AND STORM WATER OUTFALL CHARACTERIZATION – PHASE I: RECONNAISSANCE WORK PLAN – INFORMATION GATHERING